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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/597,307	09/05/2007	Andrea Marziali	B719 0005/GNM	9154

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EXAMINER
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NOGUEROLA, ALEXANDER STEPHAN

ART UNIT	PAPER NUMBER
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1759

NOTIFICATION DATE	DELIVERY MODE
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02/09/2011

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mail@patentable.com

<b>Office Action Summary</b>	<b>Application No.</b> 10/597,307	<b>Applicant(s)</b> MARZIALI ET AL.	
	<b>Examiner</b> ALEX NOGUEROLA	<b>Art Unit</b> 1759	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 1 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 07/19/2006 (preliminary amndt.).
- 2a) ☐ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) See Continuation Sheet is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) \_\_\_\_\_ is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☒ Claim(s) 1-17,20-36,38,42-47,50-52,55,56,61-65,68-82,84-112,141-153,162-165,182,185 and 186 are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-943) | Paper No(s)/Mail Date _____                                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

Continuation of Disposition of Claims: Claims pending in the application are 1-17,20-36,38,42-47,50-52,55,56,61-65,68-82,84-112,141-153,162-165,182,185 and 186.

## DETAILED ACTION

### *Election/Restrictions*

1. This application contains claims directed to more than one species of the generic invention. These species are deemed to lack unity of invention because they are not so linked as to form a single general inventive concept under PCT Rule 13.1.

The species are as follows:

Species I – types of time-varying driving fields. All of the independent claims (claims 1, 141, and 182) only refer to the genus of time-varying driving fields.

Paragraph [0036] of Applicant's specification lists particular species of time-varying driving fields:

- \* a time-varying electric field;
- \* a time-varying magnetic field;
- a time-varying flow in the medium;
- a time-varying density gradient of some species in the medium;
- a time-varying gravitational or acceleration field (which may be obtained, for example by accelerating a medium containing particles and periodically changing an orientation of the medium relative to the direction of the gravitational or acceleration field);

Species II – types of mobility-varying fields. All of the independent claims only refer to the genus of mobility-varying fields. Paragraph [0039] of Applicant's specification lists particular species of time-varying driving fields:

- changing a temperature of the medium;
- exposing the particles to light or other radiation having an intensity and/or polarization and/or wavelength that varies in time With the driving field;
- applying an electric field to the portion of the medium through which the particles

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are passing;

- applying a magnetic field to the medium through which the particles are passing (the magnetic field may, for example, alter an orientation of a magnetic dipole " associated with the particle and thereby affect a coefficient of drag of the particle or alter a viscosity of the medium which may comprise a suitable magneto-rheological fluid);
- applying an acoustic signal to the portion of the medium through which the particles are passing;
- causing a cyclic change in concentration of a species in the medium;
- exploiting electroosmotic effects;
- causing cyclic chemical changes in the medium;
- causing the particles to cyclically bind and unbind to other particles in or components of the medium;
- varying a hydrostatic pressure experienced by the medium;
- varying physical dimensions of the medium to cause a change in an effective drag experienced by particles in the medium;
- applying magnetic fields to the medium.

Note: (1) that if either of the species applying an electric field ... or exploiting electroosmotic effects is elected the other species will be rejoined (considered). Likewise for both species that require applying a magnetic field to the medium, and

(2) if the species causing cyclic chemical changes in the medium is elected

Applicant will have to further elect among the following four sub-species listed in specification paragraph [0048]

... inducing changes in one or more of

- a conformation of the particles;
- a conformation of some other species;
- binding of the particles to one another or to other species or structures in the medium;
- binding of species in the medium to one another; viscosity of the medium;

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Species III - particle types. Species of particles are listed in Paragraph [0051] of

Applicant's specification:

- electrically charged or neutral biomacromolecules such as proteins, RNA, DNA, and suitable lipids; long polymers; polypeptides,
- aggregations of molecules such as micelles or other supramolecular assemblies;
- any particles to which magnetic beads or electrically-charged beads can be attached;
- living microorganisms;

Note that if Applicant elects the species electrically charged or neutral biomacromolecules Applicant will have to further elect among the following three sub-species

sub-species DNA and RNA (together);

sub-species proteins and polypeptides; and

sub-species lipids.

Species IV – media. Paragraph [0053] of Applicant's specification lists particular species of media

- a gel, such as an agarose gel or a performance optimized polymer (POP) gel (available from Perkin Elmer Corporation);
- a solution, aqueous or otherwise;
- entangled liquid solutions of polymers;
- viscous or dense solutions;
- Solutions of polymers designed to bind specifically to the molecules (or other particles) whose motion is to be directed;
- acrylamide, linear poly-acrylamide;
- micro-fabricated structures such as arrays of posts and the like, with spacing such that the particles of interest can be entangled or retarded by frequent collision or interaction with the micro-fabricated structure;
- structures designed to interact with molecules by means of entropic trapping (e.g. Craighead et al., in Science 12 May 2000 Vol. 288);
- high viscosity fluids such as Pluronic TM F127 (available from BASF);
- water;

Note: (1) if Applicant elects a gel the Examiner will also consider acrylamide gel in addition to agarose gel, and

(2) if Applicant elects entangled liquid solutions of polymers the Examiner will also consider linear poly-acrylamide.

Applicant is required, in reply to this action, to elect a single species, from each of Species I-IV, to which the claims shall be restricted if no generic claim is finally held to be allowable. The reply must also identify the claims readable on the elected species, including any claims subsequently added. An argument that a claim is allowable or that all claims are generic is considered non-responsive unless accompanied by an election.

Upon the allowance of a generic claim, applicant will be entitled to consideration of claims to additional species which are written in dependent form or otherwise require all the limitations of an allowed generic claim. Currently, the following claims are generic: claims 1, 141, and 182.

## 2. REQUIREMENT FOR UNITY OF INVENTION

As provided in 37 CFR 1.475(a), a national stage application shall relate to one invention only or to a group of inventions so linked as to form a single general inventive concept ("requirement of unity of invention"). Where a group of inventions is claimed in a national stage application, the requirement of unity of invention shall be fulfilled only

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when there is a technical relationship among those inventions involving one or more of the same or corresponding special technical features. The expression “special technical features” shall mean those technical features that define a contribution which each of the claimed inventions, considered as a whole, makes over the prior art.

The determination whether a group of inventions is so linked as to form a single general inventive concept shall be made without regard to whether the inventions are claimed in separate claims or as alternatives within a single claim. See 37 CFR 1.475(e).

#### WHEN CLAIMS ARE DIRECTED TO MULTIPLE CATEGORIES OF INVENTIONS

As provided in 37 CFR 1.475(b), a national stage application containing claims to different categories of invention will be considered to have unity of invention if the claims are drawn only to one of the following combinations of categories:

- (1) A product and a process specially adapted for the manufacture of said product; or
- (2) A product and process of use of said product; or
- (3) A product, a process specially adapted for the manufacture of the said product, and a use of the said product; or
- (4) A process and an apparatus or means specifically designed for carrying out the said process; or



(5) A product, a process specially adapted for the manufacture of the said product, and an apparatus or means specifically designed for carrying out the said process.

Otherwise, unity of invention might not be present. See 37 CFR 1.475(c).

3. A telephone call was not made to request an oral election to the above restriction requirement because of the great length and complexity of the restriction.

Applicant is advised that the reply to this requirement to be complete must include (i) an election of a species or invention to be examined even though the requirement may be traversed (37 CFR 1.143) and (ii) identification of the claims encompassing the elected invention.

The election of an invention or species may be made with or without traverse. To preserve a right to petition, the election must be made with traverse. If the reply does not distinctly and specifically point out supposed errors in the restriction requirement, the election shall be treated as an election without traverse. Traversal must be presented at the time of election in order to be considered timely. Failure to timely traverse the requirement will result in the loss of right to petition under 37 CFR 1.144. If claims are added after the election, applicant must indicate which of these claims are readable on the elected invention or species.

Should applicant traverse on the ground that the inventions have unity of invention (37 CFR 1.475(a)), applicant must provide reasons in support thereof.

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Applicant may submit evidence or identify such evidence now of record showing the inventions to be obvious variants or clearly admit on the record that this is the case.

Where such evidence or admission is provided by applicant, if the examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.

4. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ALEX NOGUEROLA whose telephone number is (571) 272-1343. The examiner can normally be reached on M-F 8:30 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, ALEXA NECKEL can be reached on (571) 272-1446. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Alex Noguera/  
Primary Examiner, Art Unit 1759  
February 4, 2011